

CO59-003-e

Gait and balance training in advanced Parkinson's disease: Comparative study of three methodsL. Di Biagio^{*}, E. Andrenelli, E. Sordoni, A.M. Monsù, M.G. Ceravolo, M. Capecci*Department of Experimental and Clinical Medicine, Politecnica delle Marche University, Ancona, Italy*^{*}Corresponding author.**Keywords:** Parkinson's disease; Dance therapy; Freezing of gait**Background—Objectives.**— We compared the short- and mid-term effects of three rehabilitation approaches for gait and balance disorders in Parkinson's disease (PD).**Methods.**— A randomized controlled study with single blind assessment and one month follow-up was performed. Forty-three subjects (mean PD duration: 9.9 years) were randomized into 3 groups, either receiving dance therapy with Latino and Tango music (one-hour sessions, 3 days/week × 4 weeks), or balance training on a balance platform (30-minute sessions 5 days/week × 4 weeks) or treadmill training (30-minute sessions 5 days/week × 4 weeks). Assessments included 10-meter walking time (10MWT), 6-minute walking test (6MWT), Timed Up and Go (TUG), Berg Balance scale (BBS) and Freezing of Gait (FOG) Questionnaire, at baseline (T0), after treatment (T1), and 1 month later (T2).**Results.**— At T1, gait velocity and balance similarly improved in all groups (10MWT, $P=0.02$; BBS; $P=0.0001$; 6MWT, $P=0.001$), though more after treadmill training ($P=0.008$). TUG score improved in all groups ($P=0.002$), though more after Balance training ($P=0.04$). At T2, BBS and TUG scores decreased in all groups.**Discussion.**— Dance therapy was as effective as task-oriented approaches, acting as a global multimodal treatment of disabling axial symptoms in PD.<http://dx.doi.org/10.1016/j.rehab.2014.03.1208>

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Three weeks of cycle ergometer versus treadmill training for patients with Parkinson's disease: A randomized controlled pilot trialF. Pisano^{a,*}, A. Mezzani^a, C. Delconte^a, M. Godi^a, I. Arcolin^a, A. Nardone^b^a *Fondazione Salvatore Maugeri, IRCCS, Veruno (NO), Italy*^b *Fondazione Salvatore Maugeri, IRCCS and Università degli Studi del Piemonte Orientale, Dipartimento di Medicina Traslazionale, Novara, Italy*^{*}Corresponding author.**Keywords:** Parkinson's disease; Gait disorders; Aerobic exercise; Treadmill; Cycle ergometer**Background.**— Treadmill training improves gait in the elderly and in patients with Parkinson's disease (PD). Cyclo-ergometer training improves gait in the elderly, but there is no evidence in PD patients.**Methods.**— Fourteen patients were trained with treadmill (PD-T) or cyclo-ergometer (PD-C) at the same intensity, assessed with cardiopulmonary exercise testing, for 3 weeks, 1 hour/day in addition to exercises common to both groups for 1 hour/day. Outcome measures included the 6-minutes walking test (6MWT), step length and cadence assessed with a baropodometric walkway, Mini-BESTest balance scale, UPDRS and Cumulative Illness Rating Scale (CIRS).**Results.**— Age, disease duration, Hoehn-Yahr, CIRS were not different between groups. At the end of treatment, both groups showed similar improvement in distance at the 6MWT, step length, Mini-BESTest and UPDRS, without any change in cadence.**Discussion.**— Cyclo-ergometer training improves walking parameters and reduces clinical signs of PD, as much as treadmill training. Gait improvement is

in cadence. Gait improvement, in contrast with balance, cannot have been produced by the exercises common to both groups, since these exercises did not include gait training.

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CO66-002-e

Effects on an intensive physical therapy program on spiralography in Parkinson's diseaseA. Calvalido^{*}, W. Almangour, C. Pauwels, E. Hutin, N. Bayle, J.-M. Gracies*Service de rééducation Neurolocomotrice, Hôpitaux Universitaires Henri-Mondor, Université Paris-Est, Créteil, France*^{*}Corresponding author.**Keywords:** Spiralography; Parkinson's disease; Physical therapy**Background.**— Measurements of spiral size and symmetry are useful as clinical markers of Parkinson's disease (PD). We devised a manual method to determine: (i) the Highest and Lowest Rates of Radius Increase per loop (HRRI, LRRI); (ii) their ratio, or Coefficient of Symmetry (CS); and (iii) the Size-Symmetry Index, SSI=LRRI × CS. This study evaluates the effects of an 8-week, intensive physical therapy program on these parameters.**Methods.**— Thirty-four PD patients aged 54–86 (67 ± 8) drew freehand spirals with each hand before and after an intensive home therapy program 1 hour 3 times a week for 8 weeks. The more hypometric hand was defined as that with the lower LRRI.**Results.**— At baseline, LRRI, CS and SSI were smaller in the more hypometric hand vs the other hand. After 8 weeks of treatment, only the more hypometric hand was improved in spiralography, with increases in LRRI, CS and SSI to 8.1 mm/loop ($P=0.009$ vs baseline), 0.70 ($P=0.08$), 6.01 mm/loop ($P=0.016$) respectively.**Conclusions.**— Eight weeks of intensive physical therapy bring spiral scaling and symmetry on the more affected side close to contralateral values, suggesting an enhanced dopaminergic input in the more affected nigrostriatal pathways after intensive motor training in PD.<http://dx.doi.org/10.1016/j.rehab.2014.03.1210>

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Effects of an intensive physical therapy program on a marker of Parkinson's disease: Alternate forearm pronation/supination movements of large vs small amplitudeW. Almangour^{a,*}, A. Calvalido^b, C. Pauwels^b, E. Hutin^b, N. Bayle^b, J.-M. Gracies^b^a *Service de Rééducation Neurolocomotrice, Hôpitaux Universitaires Henri-Mondor, Créteil, France*^b *Service de Rééducation Neurolocomotrice, Hôpitaux Universitaires Henri-Mondor, Université Paris-Est, Créteil, France*^{*}Corresponding author.**Background.**— Comparison of the frequencies of rapid alternating movements (RAM) of forearm pronation/supination of small and large amplitudes may be useful as a marker of Parkinson's disease (PD). This study evaluates the effects of an 8-week, intensive physical therapy program.**Methods.**— Thirty-four PD patients (age 67 ± 8) performed small and large pronation/supination RAM before and after an intensive home therapy program involving aerobic and strengthening exercises, 1 hour 3 times a week for 8 weeks. The hand with the lower frequency of large movements at baseline was defined as the more hypometric hand.**Results.**— At baseline, the frequency of large RAM in the more hypometric hand was 0.64 Hz vs 0.78 Hz in the contralateral hand ($P<0.05$, *t*-test). After 8 weeks of treatment, only the more hypometric hand was improved in large RAM frequency, which increased to 0.70 Hz ($P=0.009$ vs baseline).